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**United States Patent** [19][11] **Patent Number:** **5,365,497****Born**[45] **Date of Patent:** **Nov. 15, 1994****[54] SILENT ELECTROMAGNETIC ALARM****[75] Inventor:** **Jean-Jacques Born**, Morges,  
Switzerland**[73] Assignee:** **Asulab S.A.**, Bienne, Switzerland**[21] Appl. No.:** **238,024****[22] Filed:** **May 3, 1994****[30] Foreign Application Priority Data**

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**[51] Int. Cl.<sup>5</sup>** ..... **G04B 19/06; G04C 21/00****[52] U.S. Cl.** ..... **368/230; 368/250****[58] Field of Search** ..... 368/76, 86, 88, 160,  
368/239, 243, 244, 250, 276; 340/407**[56] References Cited****U.S. PATENT DOCUMENTS**

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of Japan, vol. 009, No. 236 (P-390), 21 Sep. 1985.*Primary Examiner*—Vit W. Miska*Attorney, Agent, or Firm*—Pollock, Vande Sande &  
Priddy**[57] ABSTRACT**

A non-acoustic alarm intended to equip a device supplying information such as time information. Such alarm includes motor means (24) which can be electrically driven and which are associated with a mass (26) adapted to be set in motion under the action of the motor means (24) in order to furnish a vibratory effect. Such alarm is furthermore characterized in that the motor means (24) are constituted by an electromagnetic motor (24a, 24b) fixedly mounted on a support (28) including elastic coupling elements (30) which are associated with said mass (26) which is designed to assume a quasi-linear oscillating motion relative to the electromagnetic motor (24a, 24b) when the motor is operated. The invention is particularly adapted for integration within a timepiece.

**17 Claims, 3 Drawing Sheets**